

hatched chick was the first to die. The loss of all the young at Salmon Bay in 1962 possibly resulted from food shortage caused by several days of very rough seas just after the chicks hatched. That year the smallest chick died on November 3, on November 9 the middle-sized one died and on November 10 the largest chick died.

Completion of the clutch during September appears to be the rule on Rottnest island. Le Souef (1902) recorded on November 15 a fully-fledged osprey in a nest on Penguin Island. Further north, the nesting season appears to be earlier. On the Abrolhos Islands, Gibson (1908) observed many nests about November 9, 1907, and noted that they all had young in the nest, or the young had just left, which indicates that they breed slightly earlier there than on Rottnest. Still further north, at North-West Cape, Carter (1903) made extensive observations on Ospreys and observed eggs between June 25 and September 3.

The young remain in the nest for about 50 days. Once they learn to fly they stay round the nest for only a few days before moving to other parts of the island.

Ten fledglings were banded; six in 1961, two in 1962, two in 1963. One bird banded on November 2, 1962, was found dead on November 2, 1963, at Lancelin about 7 miles north of Rottnest Island. A second young bird banded on November 2 was shot 240 miles south-east of Rottnest Island at Wilson Inlet, Denmark, W.A., on March 19, 1964; 4½ months after it was banded. The third, banded in November 1962, was found dead on July 20, 1963, about 50 miles N.E. of Albany, its condition suggesting it had died about a month previously.

From these limited observations it appears that the young birds disperse widely both north and south from Rottnest Island.

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SOCIAL BEHAVIOUR IN THE BANDED BLUE WREN, *MALURUS SPLENDENS*

By W. H. LOARING, Bickley.

Some years ago Mr. A. H. Robinson of Coolup, well known for his work on the Western Magpie (*Gymnorhina dorsalis*), suggested that Blue Wrens may have similar social habits to those he discovered in the Magpie—that is, occupying and defending territory in groups, rather than in pairs as is the rule with most birds. Mr. Rob-

inson's suggestion certainly holds good for the Banded Blue Wren (*Malurus splendens*), and probably for some other members of the same genus.

Investigating the habits of the present subject over many years, I never came on a group that exceeded a dozen birds in number. Indeed, it was found that even when a group had grown to that number, behaviour within it tended to become inconsistent and unpredictable.

For whereas in some large groups all the birds remained closely united, in others quarrels and disputes occurred, resulting in some of the birds separating off in an attempt to carry on a more or less independent existence within the territory.

Even so, when these small breaks in its united front occur, I don't think the birds concerned ever become quite independent of the group. It seems much more likely that while living apart in a semi-independent way they are still under group influence to the extent of responding to a compulsory urge to join with all the other members of it in defence of the territory if and when the need arises. Furthermore, these semi-independent elements within the group do not seem to resent any of the other birds visiting their nests, or even in assisting to feed their nestlings.

I strongly suspect that differences of this sort also occur in the groups of Magpies. The fact is that in both Wrens and Magpies some males are dominant birds, and when these are present in a group, rivalry and disputes between the birds can be expected. If conflicts within a group become acute or prolonged, a complete breakaway of some of the birds will sometimes eventuate. In such way new groups are formed.

In the Wrens it is not easy to estimate with accuracy the average size of a group territory. In our 20-acre property at Bickley four groups were known. One of these, Group 1, had a territory that did not extend beyond the 20-acre property, and all told, including bushland, orchard and garden, took in about 10 acres of it. This group was better known than the others and was closely studied. The other three groups, numbered 2, 3 and 4 respectively, laid claim to portions of the 20 acres, but also had territory extending beyond it in adjacent properties.

The important part of a territory obviously consists of the roost area. Nests may be placed in suitable situations anywhere within the length and breadth of the territory, but the roost area remains fixed. My, or I should say *our* Group 1, for my wife greatly assisted in observing the habits of these birds, had already established their roost place in the vicinity of our house when first we took possession of it, and although we made considerable alterations to this area, the little confraternity, apparently undismayed alike by the alterations we made and all their periods of loss or gain in numbers, remained constant in their attachment to it for over thirty years. This does not mean that they roosted in any one tree or shrub consistently night after night. On the contrary, they selected a spot

somewhere within the three or four square chains of which the chosen area consisted, with reference to the prevailing weather conditions. That is to say they moved from one side to the other of the house, or from the north to the south side of a *Crataegus* hedge in the shrubbery to avoid strong winds or other disturbing influences caused by changing weather.

In latter years, much to our regret, for some reason best known to themselves, the birds have deserted this long-standing roost place, though still occupying the old territory surrounding it. Having lost touch with the birds to a large extent, we do not know where they now roost.

In the years when Group 1 was still under close observation, we could not fail to notice that after the breeding season was over the birds formed an attachment to a regular "beat" which they followed day after day for long periods. On leaving their roost near the house they first went up into the underbush on the hillside above in search of food. About mid-morning they set off on their regular beat or patrol. First down past the house over Aldersyde Road (which, extending along the gully hereabouts, cuts through our 20-acre property) and on into an uncleared paddock below. Their progress was not headlong or closely bunched, but rather, they fed along in a leisurely way with individuals scattering out from side to side or lingering where the insect harvest was abundant. Along through the paddock they went till they reached some garden ground towards the south-west corner of the 20 acres. Here they recrossed the road and led up into the small orchard above. In the orchard they scattered more widely in following a rather circulatory course that eventually brought them back to the underbush above the house from which they had started. Somewhere up about the extensive bushland of this part of their territory it was their custom to remain in search of insects till roosting time again brought them down to the neighbourhood of the house. This habit of striking out a regular beat was noted in other groups, particularly in several that had territory about my late father's property, where I worked for many years.

On their long rounds the patrolling Wrens not infrequently came into contact with other small birds. Some of these, either in pure flocks, such as the winter flocks of Silvereyes and Thornbills, or in those small mixed fraternities so commonly met with, would perhaps patrol along with the Wrens over part of the way at least.

Inevitably, adjacent groups sometimes met in border disputes. Such meetings were occasions of great excitement, but though some actual fighting was at times observed, for the most part the antagonism between the opposing groups seemed to be dissipated in display and loud singing.

The various groups were not free from unwelcome intrusions, particularly in the nesting season. The chief intruders were unattached males. The appearance of one of these in the territory, set in train elaborate courtship displays among the males, the intruder himself usually taking the lead.